Epidemiology of viral hepatitis and responses in Australasia and our region

Benjamin Cowie
Director, WHO Collaborating Centre for Viral Hepatitis
Doherty Institute

benjamin.cowie@mh.org.au
www.doherty.edu.au/whoccvh

WHO Collaborating Centre for Viral Hepatitis VIDRL

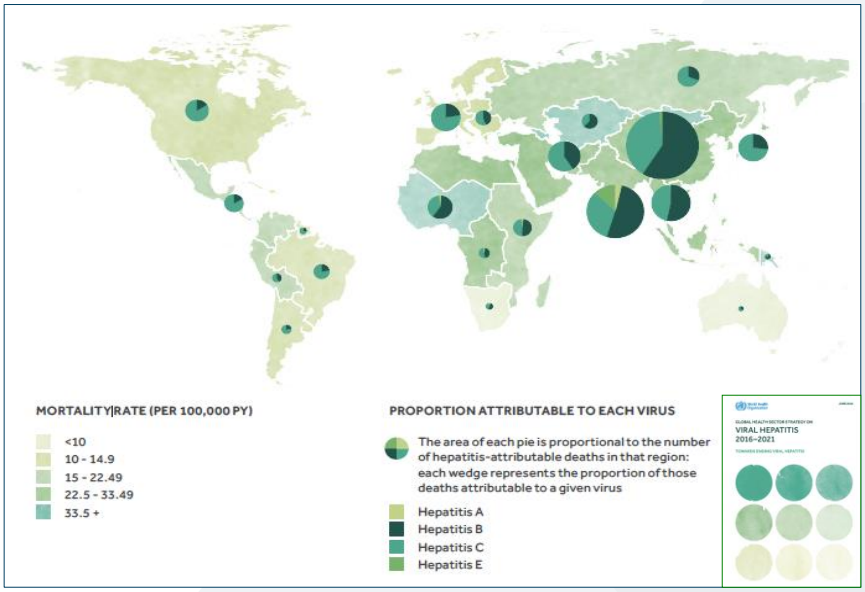
Doherty Institute
The University of Melbourne
The Royal Melbourne Hospital
A joint venture between The University of Melbourne and The Royal Melbourne Hospital

Conflicts of interest

I receive no funding or support of any kind from any pharmaceutical or for-profit health care related industry.

Acknowledgment

For people living with viral hepatitis



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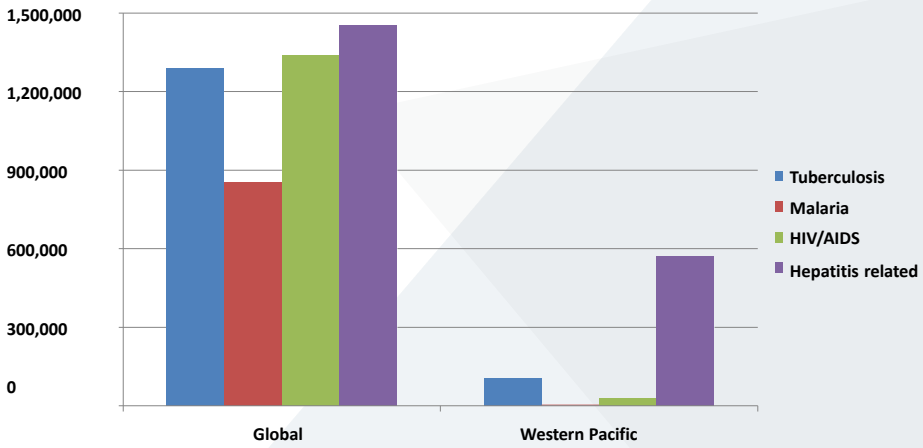
Comparison of global and Western Pacific mortality for major communicable diseases, 2013*



*GBD 2013 Mortality and Causes of Death Collaborators. Global, regional, and national age-sex specific all-cause and cause-specific mortality for 240 causes of death, 1990-2013: a systematic analysis for the Global Burden of Disease Study 2013. Lancet. 2015 Jan 10;385(9963):117-71.

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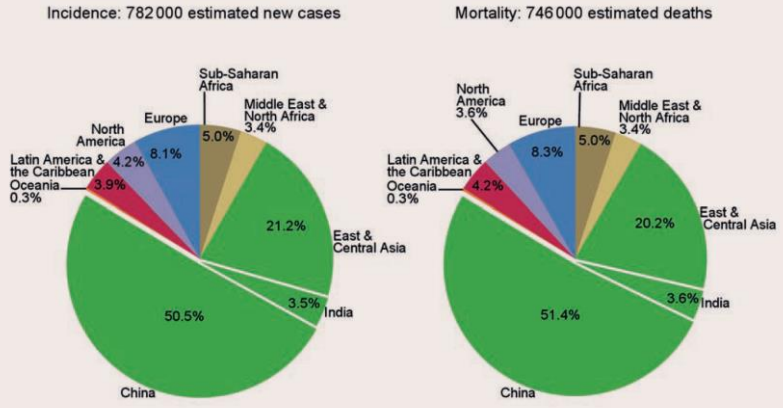
IARC – World Cancer Report, 2014

Chart 5.6.1. Estimated global number of new cases and deaths with proportions by major world regions, for liver cancer in both sexes combined, 2012.



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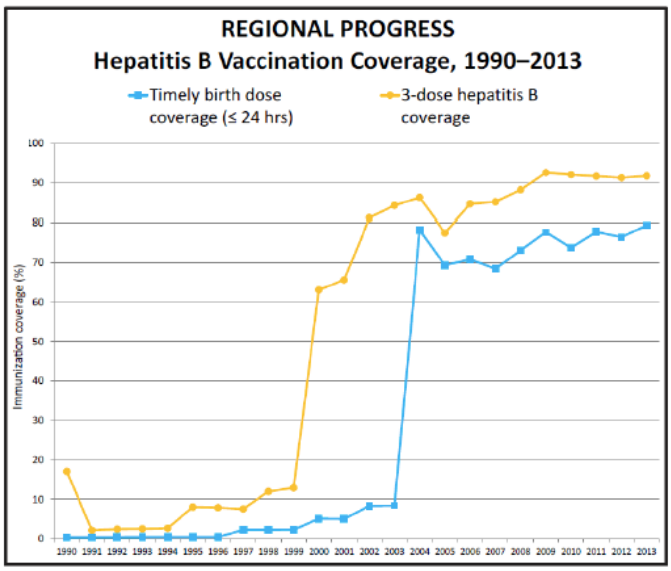
Vaccination Coverage



Source: WHO/UNICEF Joint Reporting Form (JRF) for Immunization

4 |

World Health Organization
Western Pacific Region

Prevention of Chronic Hepatitis B after 3 Decades of Escalating Vaccination Policy, China

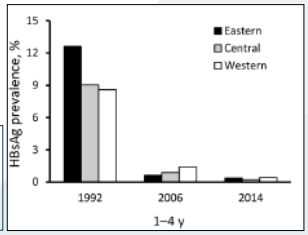
Fuqiang Cui,[1] Lipin Shen,[1] Li Li,[1] Huaqing Wang,[1] Fuzhen Wang,[1] Shengli Bi, Jianhua Liu, Guomin Zhang, Feng Wang, Hui Zheng, Xiaojin Sun, Ning Miao, Zundong Yin, Zilian Feng, Xiaofeng Liang, Yu Wang

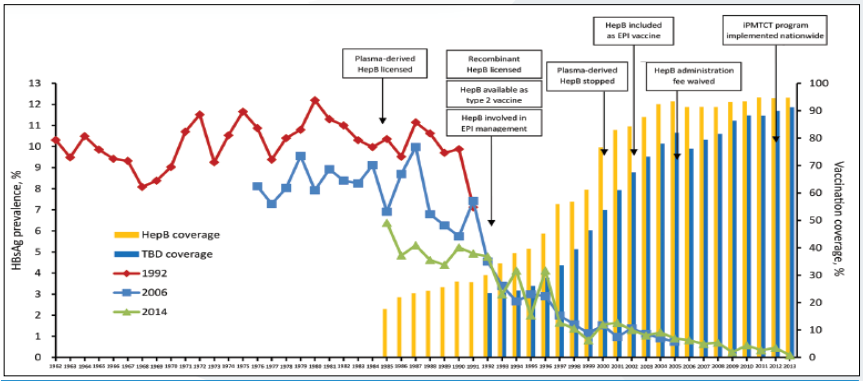
Emerging Infectious Diseases • www.cdc.gov/eid • Vol. 23, No. 5, May 2017

Children aged 5yrs : 9.9% HBsAg+ 1992 → 0.3% 2014

~ 30 million chronic infections averted

Over 5 million future deaths prevented





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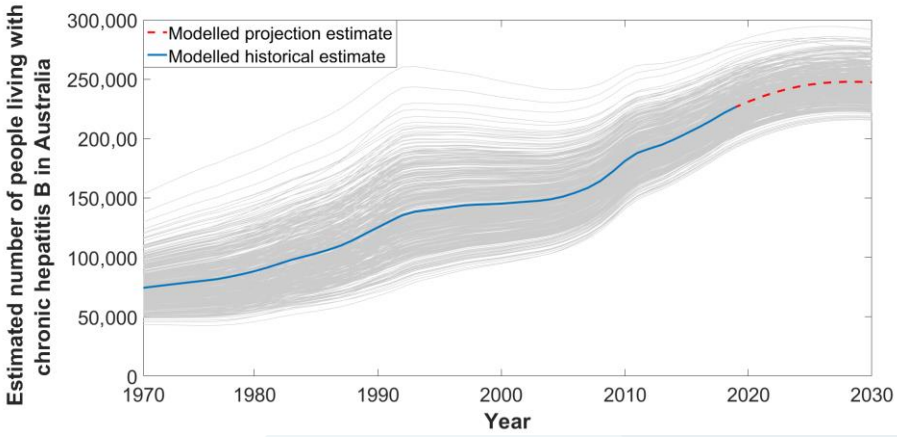
Number of people living with chronic hepatitis B



McCulloch et al, AVHEC 2019

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CHB in Australia

https://ashm.org.au/programs/Viral-Hepatitis-Mapping-Project/

https://public.tableau.com/profile/nationalhepmapping#!/

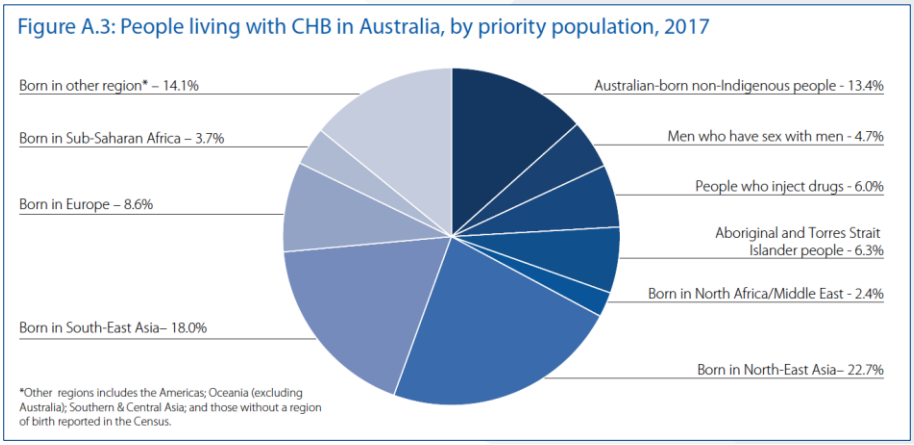

Table 1: People living with CHB in Australia according to country of birth, top 30 countries, 2011 and 2016.

	CHB prevalence	People living with CHB, 2011	People living with CHB, 2016	Proportion of total, 2016	Proportional change, 2011 to 2016
China	7.56%	25,154	39,991	25.5%	59%
Vietnam	8.15%	15,727	18,545	11.8%	18%
New Zealand	1.38%	6,959	7,430	4.7%	7%
Philippines	3.02%	5,401	7,292	4.7%	35%
England	0.54%	5,135	5,089	3.2%	-1%
Taiwan	10.42%	3,110	5,041	3.2%	62%
Italy	2.52%	4,874	4,552	2.9%	-7%
Thailand	4.93%	2,339	3,383	2.2%	45%
Cambodia	9.22%	2,723	3,151	2.0%	16%
Hong Kong	2.92%	2,280	2,624	1.7%	15%
South Korea	2.46%	1,913	2518	1.6%	32%
Malaysia	1.70%	2,065	2,445	1.6%	18%
India	0.40%	1,220	1,873	1.2%	53%
Myanmar	5.34%	1,212	1,791	1.1%	48%
Indonesia	2.14%	1,407	1,613	1.0%	15%
Pakistan	2.40%	757	1,537	1.0%	103%
Poland	3.00%	1,523	1,406	0.9%	-8%
Bangladesh	3.10%	899	1,322	0.8%	47%
Singapore	2.28%	1,157	1,292	0.8%	12%
Somalia	14.77%	876	1,165	0.7%	33%
Afghanistan	2.14%	637	1,035	0.7%	62%
Tonga	9.83%	944	992	0.6%	5%
Samoa	4.01%	798	989	0.6%	24%
Kenya	5.16%	744	941	0.6%	26%
Turkey	2.78%	954	925	0.6%	-3%
Sudan	5.15%	1,040	896	0.6%	-14%
Nigeria	9.76%	460	838	0.5%	82%
Germany	0.70%	789	744	0.5%	-6%
Ethiopia	6.03%	532	729	0.5%	37%
Greece	0.74%	776	724	0.5%	-7%
AUSTRALIA	0.98%	197,815	237,894	-	13%

Cultural and linguistic diversity of people living with chronic hepatitis B in 2011–2016: changing migration, shifting epidemiology

Jennifer MacLachlan,[1,2] Benjamin Cowie[1,2,3]

2018 Online
Australian and New Zealand Journal of Public Health

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Diversity in estimated CHB prevalence in Aboriginal and Torres Strait Islander people

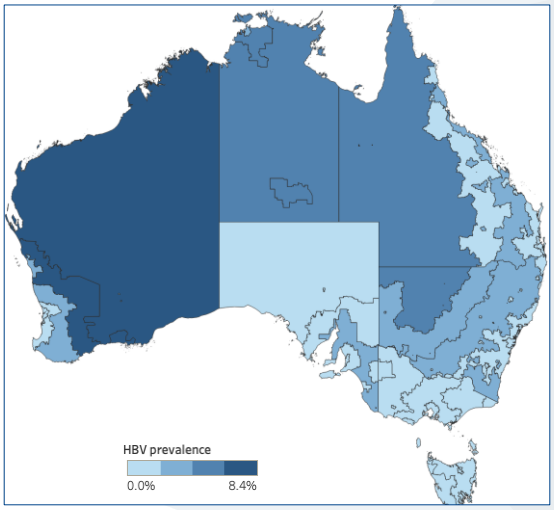
Table A.4 CHB prevalence estimates in Aboriginal and Torres Strait Islander Australians, by state and by remoteness region of Australia, 2017

State/Territory	Major cities	Inner regional	Outer regional	Remote	Very remote	TOTAL
ACT	0.7%	*N/A*	*N/A*	*N/A*	*N/A*	0.7%
NSW	0.7%	1.6%	2.9%	3.8%	5.3%	1.5%
NT	*N/A*	*N/A*	2.2%	5.1%	5.3%	4.6%
QLD	1.5%	0.8%	2.9%	1.4%	4.5%	2.1%
SA	1.7%	1.3%	2.2%	2.0%	1.7%	1.8%
TAS	*N/A*	0.7%	0.7%	*N/A*	*N/A*	1.4%
VIC	0.8%	0.7%	0.9%	*N/A*	*N/A*	1.5%
WA	1.2%	1.4%	3.9%	6.5%	8.4%	4.1%
AUSTRALIA	**1.1%**	**1.4%**	**3.8%**	**5.3%**	**5.5%**	**2.5%**

Data source: CHB prevalence estimates in Aboriginal and Torres Strait Islander people based on established population prevalence from published studies, adjusted according to region using notifications data and ABS population distribution information. N/A = not applicable (no regions with this level of remoteness exist in the jurisdiction).

MacLachlan, AVHEC 2019

Diversity in estimated CHB prevalence in Aboriginal and Torres Strait Islander people



MacLachlan, AVHEC 2019

CHB in Aotearoa New Zealand 2005

THE NEW ZEALAND MEDICAL JOURNAL
Vol 118 No 1211 ISSN 1175 8716

The New Zealand Hepatitis B Screening Programme: screening coverage and prevalence of chronic hepatitis B infection

Tom Robinson, Chris Bullen, Wendy Humphries, John Hornell, Chris Moyes

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Table 2. HBsAg prevalence by age, sex, ethnicity and region

Category	Variable	Sample size	Number of HBsAg-positive participants	HBsAg+ prevalence (%)	95% CI
Age	<15	3107	109	3.5	2.9–4.2
	15-40	118779	6492	5.5	5.3–5.6
	>40	55406	3575	6.5	6.2–6.7
Sex	Male	79195	4835	6.1	5.9–6.3
	Female	97794	5318	5.4	5.3–5.6
Ethnicity	Maori	81219	4081	5.6	5.4–5.7
	Pacific	43734	2633	7.3	7.0–7.5
	Asian	31484	1522	6.2	5.9–6.5
	Other	18838	462	2.8	2.6–3.0
	Pacific groups:				
	-Samoan	19298	867	4.5	4.2–4.7
	-Cook Islands	7041	446	6.3	5.7–6.9
	-Tongan	10478	1370	13.1	12.4–13.7
	-Niuean	1995	172	8.6	7.3–9.8
	-Tokelauan	1080	41	3.8	2.6–4.9
	-Fijian	1109	38	3.4	2.3–4.4
	Asian groups:				
	-SE Asian	2950	240	8.1	7.1–9.1
	-Chinese	14160	1258	8.9	8.4–9.3
	-Indian	7497	44	0.6	0.4–0.7
Region	Northland	9092	430	4.7	4.3–5.2
	Auckland	81036	5650	7.0	6.8–7.1
	Waikato	20149	765	3.8	3.5–4.1
	BOP	18907	887	4.7	4.4–5.0
	Gisborne	7666	349	4.6	4.1–5.0
	Taranaki	1311	42	3.2	2.3–4.2
	Hawke's Bay	8581	343	4.0	3.6–4.4
	Man*-Wanganui	5245	221	4.2	3.7–4.8
	Wellington	22441	801	3.6	3.3–3.8
Total		**177328**	**10176**	**5.7**	**5.6–5.8**

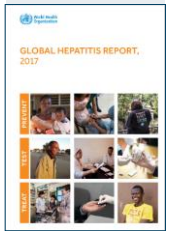
BOP=Bay of Plenty; SE Asian=South-East Asian (e.g. Thai); CI=confidence interval; *Manawatu.

Global elimination targets for viral hepatitis

	Interventions	Indicator	2015 baseline	Targets 2020	Targets 2030
1	Hepatitis B vaccination	HEPB3 coverage	84%	90%	90%
2	HBV PMTCT[a]	HEP vaccine birth dose coverage	39%	50%	90%
3	Blood safety	Donations screened with quality assurance	97%	95%	100%
	Injection safety	Proportion of unsafe injections	5%	0%	0%
4	Harm reduction	Syringes & needles distributed/PWID/year	27	200	300
5	Testing services	% HBV-infected diagnosed	9%	30%	90%
		% HCV-infected diagnosed	20%	30%	90%
	Treatment	% diagnosed with HBV on treatment	8%[b]	–[c]	80%[d]
		% diagnosed with HCV started on treatment	7%[b]	–[c]	80%[d]

HEPB3: three doses of hepatitis B vaccine; PMTCT: prevention of mother-to-child transmission; PWID: person who injects drugs
Source: WHO, including commissioned work, United Nations, UNICEF and one published study *(73)*

[a] Interventions to prevent the mother-to-child transmission of HBV
[b] Less than 20% of persons living with HBV infection are eligible for treatment with antinucleos(t)ides available today.
[c] 5 million treated for HBV and 3 million treated for HCV (cumulative targets)
[d] Of those eligible for treatment



ANNEX 1. BASELINE ESTIMATES TOWARDS THE TARGETS OF THE GLOBAL HEALTH SECTOR STRATEGY

Table A1. Summary of the 2015 baseline estimates of the indicators of the global health sector strategy on viral hepatitis, by region

			Regional estimates						Global	Targets required for elimination	
	Interventions	Indicator	African Region	Region of the Americas	Eastern Mediterranean Region	European Region	South-East Asia Region	Western Pacific Region	2015 baseline	2020	2030
1	Hepatitis B vaccination	HEPB3 coverage	76%	89%	80%	81%	87%	90%	84%	90%	90%
2	HBV PMTCT[a]	HEP vaccine birth dose coverage	10%	72%	23%	39%	34%	83%	39%	50%	90%
3	Blood safety	Donations screened with quality assurance	80%	98%	81%	99.9%	85%	98%	97%	95%	100%
	Injection safety	Proportion of unsafe injections	3.7%	3.4%	14.0%	4.6%	5.2%	3.2%	5% *(40)*	0%	0%
4	Harm reduction	Syringes & needles distributed/PWID/year	6	22	25	59	29	57	27	200	300
5	Testing services	% HBV-infected diagnosed	0.3%	10%	2%	13%	3%	2%	9%	30%	90%
		% HCV-infected diagnosed	6%	36%	18%	31%	9%	21%	20%	30%	90%
	Treatment	% diagnosed with HBV on treatment	N/A	N/A	N/A	N/A	N/A	N/A	8%	–[c]	80%[d]
		% diagnosed with HCV started on treatment	2%	11%	12%	5%	7%	5%	7%[b]	–[c]	80%[d]

HEPB3: three doses of hepatitis B vaccine; PMTCT: prevention of mother-to-child transmission; PWID: person who injects drugs

[a] Interventions to prevent the mother-to-child transmission of HBV
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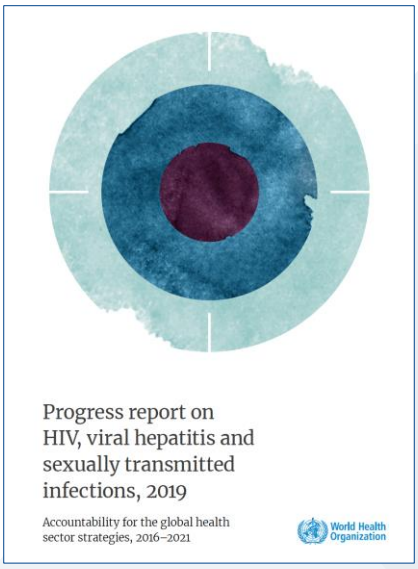

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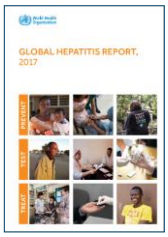
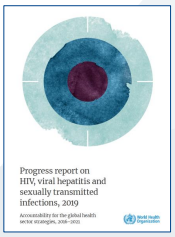


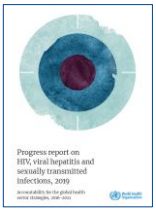


HBV diagnosed 2015: 9% (22m)
HCV diagnosed 2015: 20% (14m)

HBV diagnosed 2016: 10% (27m)
HCV diagnosed 2017: 19% (13.1m)

HBV treated 2015: 8% (1.7m)
HCV treated 2015: 7% (1.1m)

HBV treated 2016: 17% (4.5m)
HCV treated by end 2017: 5m



Viral Hepatitis

WHO Region	Hepatitis B		Hepatitis C	
	Proportion of people infected who are diagnosed, 2015 (%)	Proportion of diagnosed people treated, 2015 (%)	Proportion of people infected who are diagnosed, 2015 (%)	Proportion of diagnosed people treated, 2015 (%)
African Region	0.3	18.4	5.7 [3.9–7.0]	2.2 [0.6–3.0]
Region of the Americas	9.6	16.4	36.3 [33.8–37.4]	11.1 [10.7–11.8]
South-East Asia Region	2.6	6.2	8.7 [6.0–9.8]	7.1 [4.9–8.4]
European Region	13.1	5.0	31.2 [25.2–34.7]	4.9 [4.2–7.2]
Eastern Mediterranean Region	1.7	0.5	17.7 [17.4–18.0]	12.1 [11.2–12.4]
Western Pacific Region	2.3	7.9	21.5 [20.3–21.6]	4.8 [4.7–5.0]

Source: Web Annex C. Estimates of the coverage of diagnosis and treatment for hepatitis B and C virus infection, by WHO region and income group, 2015. In: Global hepatitis report 2017. Geneva: World Health Organization; 2017 (https://apps.who.int/iris/bitstream/handle/10665/277006/WHO-CDS-HIV-18.47-eng.pdf?ua=1, accessed 2 May 2019).

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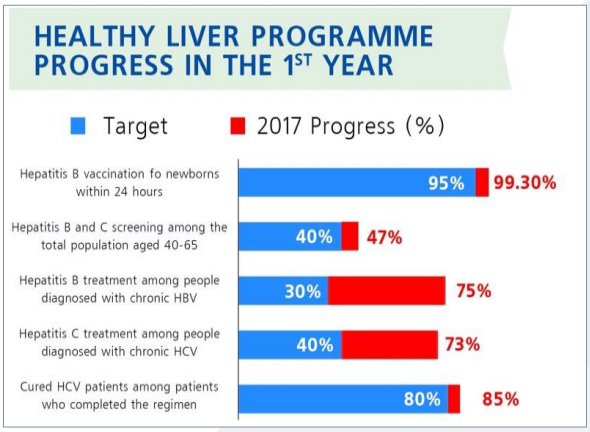
Healthy Liver Programme, Mongolia

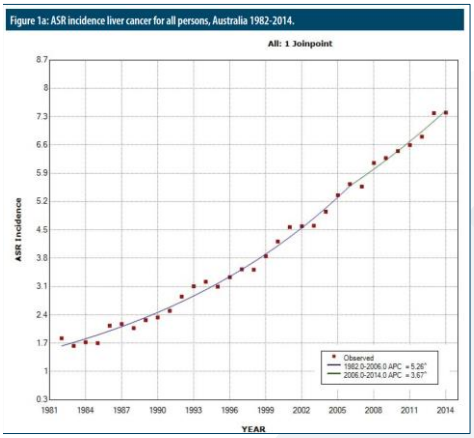


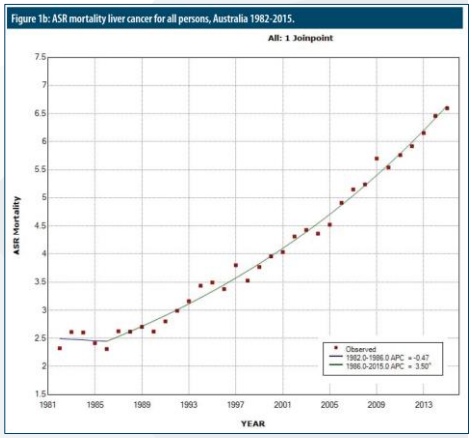
Bayanjargal et al, AVHC 2018

Incidence and mortality trends for primary liver cancer Australia, 1982-2014

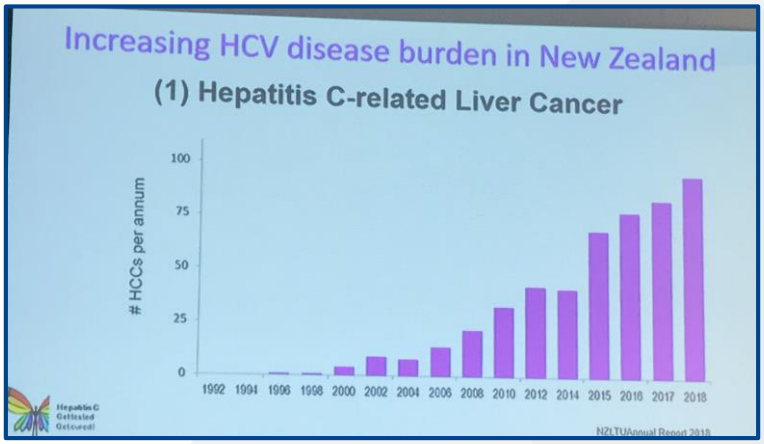
Increasing incidence and mortality related to liver cancer in Australia: time to turn the tide

Fiona Cocker,[1] Kwang Chien Yee,[2,3] Andrew J. Palmer,[1] Barbara de Graaff[1] Australian and New Zealand Journal of Public Health





Trends in HCV related HCC, Aotearoa



Gane, AVHEC 2019

ORIGINAL ARTICLE
WILEY

Australia on track to achieve WHO HCV elimination targets following rapid initial DAA treatment uptake: A modelling study

Jisoo A. Kwon[1] | Gregory J. Dore[1] | Jason Grebely[1] | Behzad Hajarizadeh[1] | Rebecca Guy[1] | Evan B. Cunningham[1] | Cherie Power[2] | Chris Estes[3] | Homie Razavi[3] | Richard T. Gray[1] | On behalf of the HCV Estimates and Projections Reference Group*

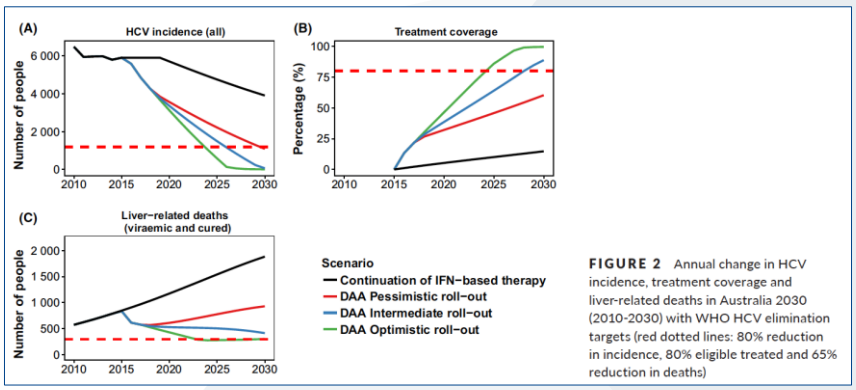


FIGURE 2 Annual change in HCV incidence, treatment coverage and liver-related deaths in Australia 2030 (2010-2030) with WHO HCV elimination targets (red dotted lines: 80% reduction in incidence, 80% eligible treated and 65% reduction in deaths)

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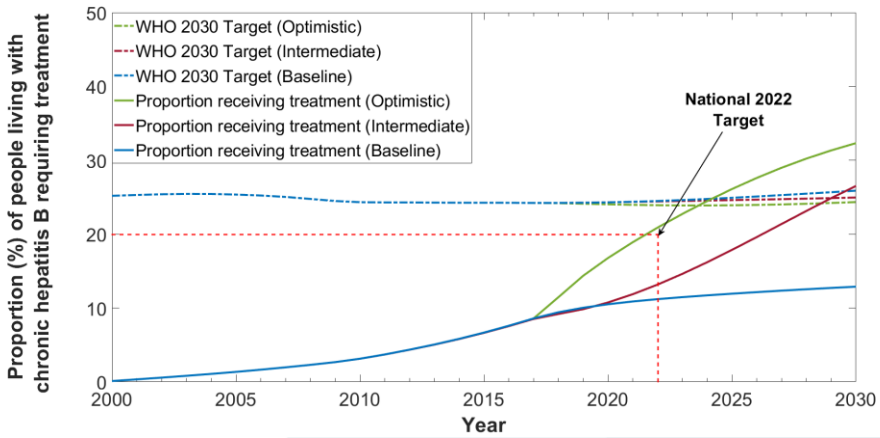
Treatment scale-up scenarios



*WHO 2030 Target = 80% of those eligible receiving treatment

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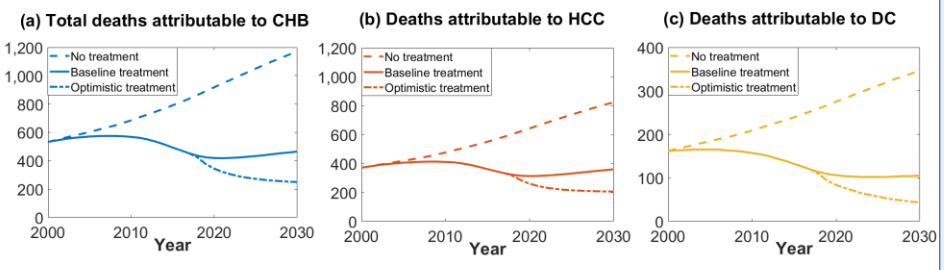
McCulloch et al, AVHEC 2019

Treatment scale-up scenarios: impact on mortality



Estimated 2,300 lives already saved between 2000 and 2017 due to current treatment uptake

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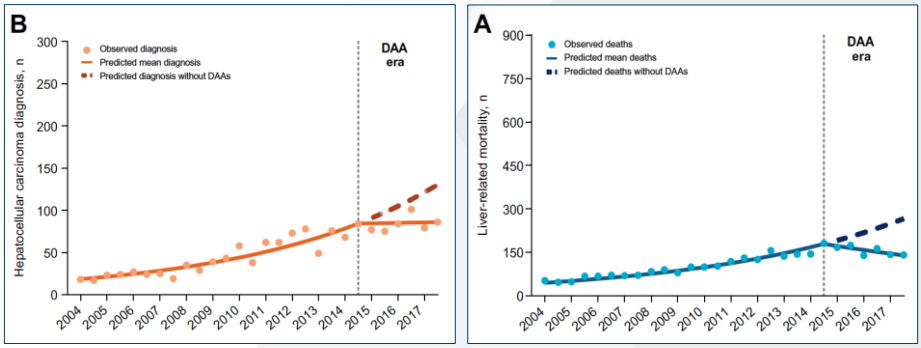
McCulloch et al, AVHEC 2019

Research Article
Viral Hepatitis

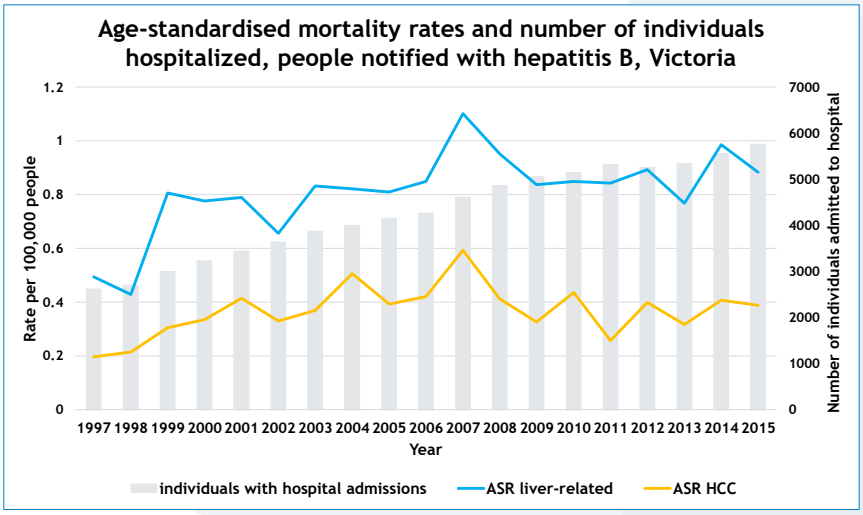
JOURNAL OF HEPATOLOGY

Declining hepatitis C virus-related liver disease burden in the direct-acting antiviral therapy era in New South Wales, Australia

Maryam Alavi[1,*], Matthew G. Law[1], Heather Valerio[1], Jason Grebely[1], Janaki Amin[2], Behzad Hajarizadeh[1], Christine Selvey[3], Jacob George[4], Gregory J. Dore[1]



HCC in people notified with CHB in Victoria



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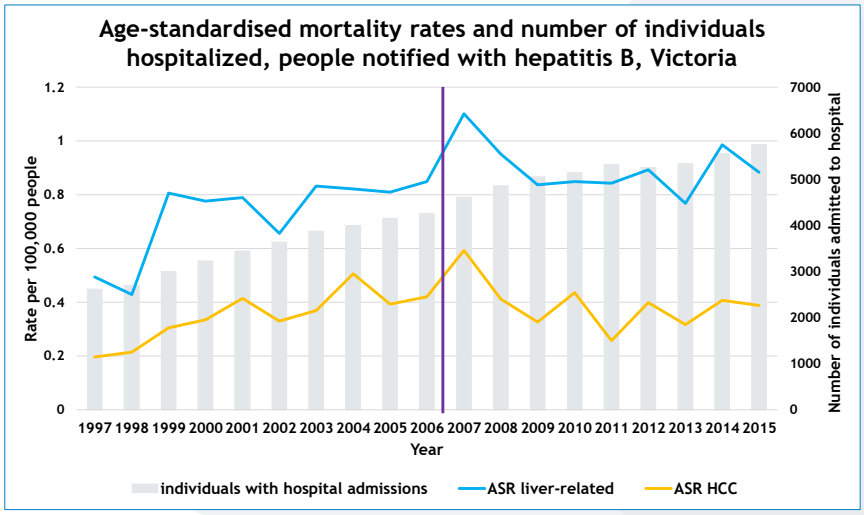

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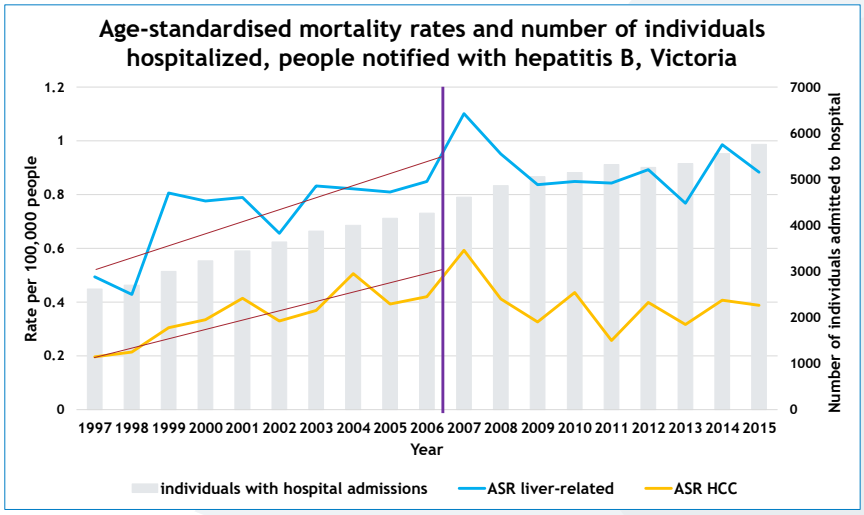

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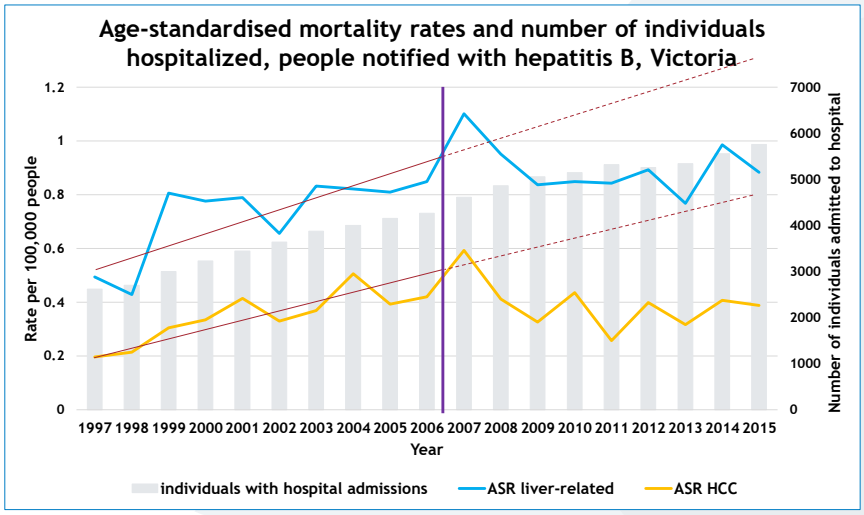

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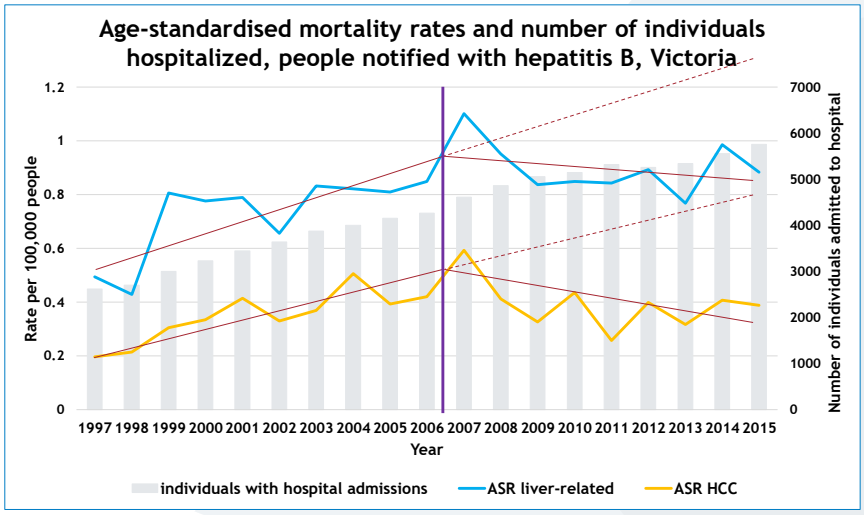

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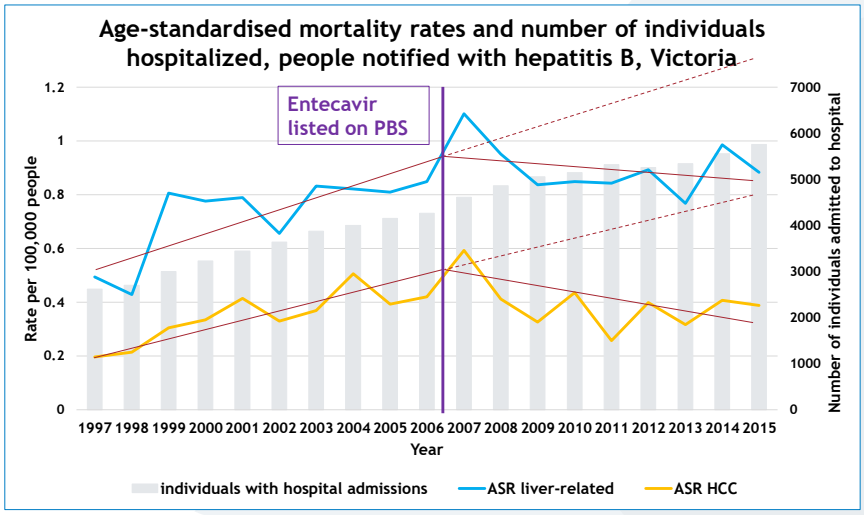
Impact of antiviral treatment on HCC



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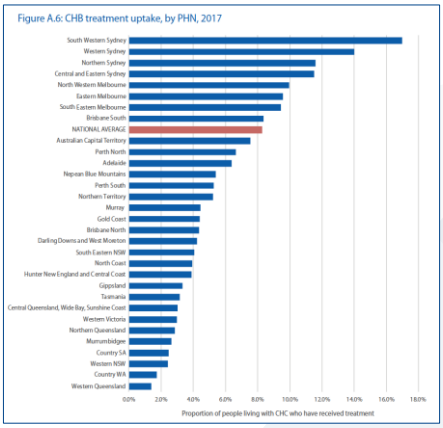
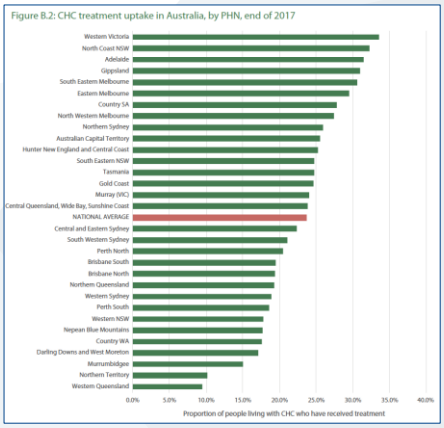
Equity in treatment access remains a major challenge





https://ashm.org.au/programs/Viral-Hepatitis-Mapping-Project/

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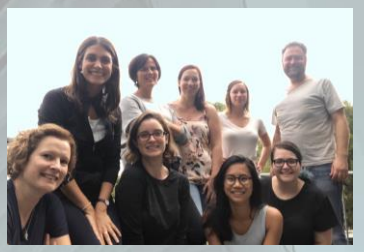

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